

TRAVELING WAVE MULTIPLYING D/A CONVERTER

ABSTRACT OF THE DISCLOSURE

5 A traveling wave multiplying digital-to-analog converter has propagation-delay matched transmission lines for conversion of a high data rate digital input to a high frequency RF analog output, for example, at microwave and millimeter wave frequencies and above. The traveling wave multiplying digital-to-analog converter includes an array of constant, high impedance
10 multiplying cells that are identical to improve component matching and propagation delay matching. The multiplying cells are connected in a spatial interleaving manner along bit lines that propagate the high bandwidth digital input. The interleaving effects a "spatial averaging" that maintains linearity of digital to analog conversion in the presence of any linear gradient δ from one
15 cell to another across the array of multiplying cells.